

CLAIMS

1. A replicon RNA, comprising a nucleotide sequence comprising a 5' untranslated region, a core protein coding sequence, an E1 protein coding sequence, an E2 protein coding sequence, an NS2 protein coding sequence, an NS3 protein coding sequence, an NS4A protein coding sequence, an NS4B protein coding sequence, an NS5A protein coding sequence, an NS5B protein coding sequence, and a 3' untranslated region of genomic RNA of hepatitis C virus of genotype 2a, at least one selectable marker gene and/or at least one reporter gene, and at least one IRES sequence.

2. The replicon RNA according to claim 1, wherein said nucleotide sequence comprises the 5' untranslated region, the at least one selectable marker gene and/or the at least one reporter gene, and the at least one IRES sequence, and the core protein coding sequence, the E1 protein coding sequence, the E2 protein coding sequence, the NS2 protein coding sequence, the NS3 protein coding sequence, the NS4A protein coding sequence, the NS4B protein coding sequence, the NS5A protein coding sequence, the NS5B protein coding sequence, and the 3' untranslated region, in this order in the 5' to 3' direction.

3. The replicon RNA according to claim 1 or 2, wherein the genomic RNA of hepatitis C virus of genotype 2a is an RNA comprising a nucleotide sequence shown in SEQ ID NO: 12.

4. The replicon RNA according to any one of claims 1 to 3, wherein the 5' untranslated region comprises a nucleotide sequence shown in SEQ ID NO: 1, the core protein coding sequence comprises a nucleotide sequence shown in SEQ ID NO: 2, the E1 protein coding sequence comprises a nucleotide sequence shown in SEQ ID NO: 3, the E2 protein coding sequence comprises a nucleotide sequence shown in SEQ ID NO: 4, the NS2 protein coding sequence comprises a nucleotide sequence shown in SEQ ID NO: 5, the NS3 protein coding sequence comprises a nucleotide sequence shown in SEQ ID NO: 6, the NS4A protein

coding sequence comprises a nucleotide sequence shown in SEQ ID NO: 7, the NS4B protein coding sequence comprises a nucleotide sequence shown in SEQ ID NO: 8, the NS5A protein coding sequence comprises a nucleotide sequence shown in SEQ ID NO: 9, the NS5B protein coding sequence comprises a nucleotide sequence shown in SEQ ID NO: 10, and the 3' untranslated region comprises a nucleotide sequence shown in SEQ ID NO: 11.

5. A replicon RNA, comprising the following RNA (a) or (b):
(a) an RNA comprising a nucleotide sequence shown in SEQ ID NO: 13; or
(b) an RNA comprising a nucleotide sequence derived from the nucleotide sequence shown in SEQ ID NO: 13 by deletion, substitution or addition of 1 to 100 nucleotides, and having autonomous replication ability and virus particle production ability.

6. A method for producing a cell which replicates a replicon RNA and produces a virus particle, comprising introducing the replicon RNA according to any one of claims 1 to 5 into a cell.

7. The method according to claim 6, wherein the cell is a proliferative cell.

8. The method according to claim 6 or 7, wherein the cell is a eukaryotic cell.

9. The method according to claim 8, wherein the eukaryotic cell is a human liver-derived cell, a human uterine cervix-derived cell or a human fetal kidney-derived cell.

10. The method according to claim 8, wherein the eukaryotic cell is a Huh7 cell, a HepG2 cell, an IMY-N9 cell, a HeLa cell or a 293 cell.

11. A cell obtainable by the method according to any one of claims 6 to 10, which replicates the replicon RNA and produces the virus particle.

12. A method for producing a hepatitis C virus particle, comprising culturing the cell according to claim 11 to allow the cell to produce the virus particle.

13. A hepatitis C virus particle obtainable by the method according to claim 12.

14. A method for producing a hepatitis C virus-infected cell, comprising culturing the cell according to claim 11 and infecting other cells with the virus particle in the culture.

15. A hepatitis C virus-infected cell obtainable by the method according to claim 14.

16. A method for screening an anti-hepatitis C virus substance, comprising culturing, in the presence of a test substance, at least one selected from the group consisting of following (a), (b) and (c):

(a) the cell according to claim 11,

(b) the hepatitis C virus infected cell according to claim 15, and

(c) the hepatitis C virus particle according to claim 13 and a hepatitis C virus permissive cell;

and detecting the replicon RNA or the virus particles in the resulting culture.

17. A hepatitis C vaccine, comprising the hepatitis C virus particle according to claim 13 or a part thereof.

18. A method for producing a hepatitis C vaccine by using the hepatitis C virus particle according to claim 13 or a part thereof as an antigen.

19. A method for producing a hepatotropic virus vector for gene therapy by using the replicon RNA according to any one of claims 1 to 5.

20. A hepatotropic virus vector obtainable by the method according to claim 18.
21. A method for replicating and/or expressing a foreign gene in a cell, comprising inserting an RNA encoding the foreign gene to the replicon RNA according to any one of claims 1 to 5 and introducing it into said cell.
22. A method for producing a cell which replicates an RNA and produces a virus particle, comprising introducing into the cell the RNA comprising a nucleotide sequence shown in SEQ ID NO. 12.
23. A method for producing a hepatitis C virus particle, comprising introducing into a cell the RNA comprising a nucleotide sequence shown in SEQ ID NO: 12 and culturing the cell to allow the cell to produce a virus particle.
24. The method according to claim 21 or 22, wherein the cell is a proliferative cell.
25. A method for producing a virus vector comprising a foreign gene, comprising inserting an RNA encoding a foreign gene into an RNA comprising the nucleotide sequence shown in SEQ ID NO: 12, introducing it into a cell, and culturing the cell to allow the cell to produce a virus particle.
26. An antibody against the hepatitis C virus particle according to claim 13.